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November 6, 2009

VIA ECFS

Marlene H. Dortch
Secretary
Federal Communications Commission
The Portals
445 - 12th Street, SW
Washington, DC 20554

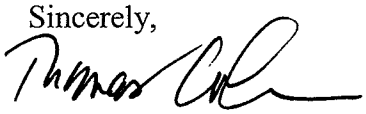
Re: Notice of *Ex Parte* Presentation, GN Docket 09-51

Dear Ms. Dortch:

On November 5, 2009, Gary Evans, Dan Pecarina, and Bob Bartz of Hiawatha Broadband Communications, Inc. ("HBC"), David Russell of Calix, Geoff Daily, and I met with Carol Simpson, legal advisor to Commissioner Clyburn. The purpose of the meeting was to discuss the attached presentation by HBC – *Big Broadband: Rural America Needs It, Too* -- which details barriers to the deployment of fiber-to-the-home ("FTTH") networks in rural areas. More specifically, HBC discussed three major barriers to FTTH deployments in these areas: insufficient access to capital and return on investment, excessive transport (middle-mile) costs, and inadequate training for the workforce deploying and operating FTTH networks. HBC believes that as part of the National Broadband Plan the federal government can deal with each of these barriers by adopting mechanisms set forth in its presentation.

Should you wish to discuss the presentation further, please contact me.

Sincerely,



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Attachments: *Big Broadband: Rural America Needs It, Too*

cc: Carol Simpson

But Unless Challenges are Overcome Large Segments Of The United States May Again Be Left Behind...

BIG BROADBAND: RURAL AMERICA NEEDS IT, TOO

HBC Demonstrates Success

- Begun as a not-for-profit community betterment project
- Luminet achieved instant success
- Education project proved broadband value
- HBC created in 1997 to continue education initiative, provide leading-edge network, change monopoly environment to one of competition
- Not-for-profit community given ownership

A Good News/Sad News Story

Strengths

- Company is profitable
- Shareholders enjoy dividends
- All communities have grown
- New businesses abound
- Telecommuters love it in the Midwest
- Networks attract application developers

Weaknesses

- ROI far below other businesses
- Profits do fuel expansion, but too little, too slow
- Growth dependent upon capital, right-fit-talent
- Needs are numerous, ability to respond limited
- Efforts overlooked because of rural location

Network Benefits: Amazing

Population grows in every market

Community	Year Network Built	Population	2009 Population	Change	Percent	Previous Decade
Winona	1998	22,450	26,876	4,426	19.71	4.20
Goodview	1998	3,240	3,670	430	13.27	3.89
St. Charles	2002	3,307	3,648	341	10.31	21.43
Wabasha	2005	2,527	2,605	78	3.08	- 3.64
Rollingstone	2007	647	697	50	7.78	- 8.32
Lewiston	2007	1,494	1,608	114	7.63	- 3.47
Stockton	2008	682	719	37	5.42	- 1.68
Total		**34,347**	**39,823**	**5,476**	**15.94**	

Commercial, Quality of Life Gains Satisfying

Winona

- 11 new businesses and industries
- More than a thousand new jobs
- Telecommuters abound, more are likely on the way
- City develops as center for fine arts
- Health care trials seek out community

Goodview

- Population growth totals 13.27 %
- Eight housing developments platted
- Construction underway in all eight
- Industrial area expands by six enterprises
- Residents in four subdivisions request annexation

Commercial, Quality of Life Gains Satisfying

St. Charles

- Eight housing developments in place, occupied
- No. 1 bedroom community to Rochester
- Community called 'boom town'
- Major employer says network key factor in reconstruction decision

Wabasha

- Rochester residents attracted to community
- Mayo doctors now also staff local clinic
- National Eagle Center constructed in 2007
- Riverside condominium attracts residents from as far away as Florida
- Negotiations with Canadian manufacturer continue

Commercial, Quality of Life Gains Satisfying

Lewiston

- New housing starts up 8%
- Three new businesses open
- New housing development platted
- Schools use network to improve contact with distant facilities
- High school classes expand through connectivity

Rollingstone, Stockton

- Tiny communities each have new housing developments
- Stockton growth following flood fueled by network
- Rollingstone School taps into distant networks
- Resident satisfaction grows in each city

Important Ancillary Benefits

- Minnesota Marine Art Musem
- Great River Shakespeare Festival
- Minnesota Beethoven Festival
- Personal, electronic health records
- Health quality study underway
- Virtual School of Winona
- WSU is now laptop institution
- New health care trial planned

Barrier: Access to Capital, Insufficient ROI

But There are Options

- Credit enhancements to drive municipal projects ★★★★★
- Omnibus backing (grants, loans) ★
- Fast-track partial loan guarantees ★★★★
- National **capital** pool ★★
- Debt service reserve fund ★★★★★
- Universal Service Fund ★★★★

Barrier: Transport Costs!

Option: Incentives

- Locate huts in strategic places, amid clusters of cities ★★★★
- Share new transport links to Huts ★★★
- Low -interest RUS loans ★★
- Utilize per-service pricing ★★★★★

Barrier: Access to Training
Option: Public-Private Effort

- Development of Fiber-Optic Standards ★★★★
- Government support for training ★★★
- Develop best practices inventory ★★★
- Change pricing model ★★★★★

Municipal Projects

- Investors will not assume all risk
- Credit support will be necessary
- Revenue bonds only legitimate option remaining
- Credit enhancements would spur investment
- Broadband must be embraced as public utility

Private Projects

- Unless community advancement is goal, private investment won't happen
- Lack of tax-exempt financing pushes up costs
- Other options pay better returns than broadband
- Market expects utility-like returns
- Penetration uncertainties make acceptable returns unlikely

U.S. Government Could Help

- ROI subsidies will be necessary
- Credit enhancements take many forms
  - Grants/loans too costly
  - Loan guarantees: solid option, but changes needed
  - Capitol pool: guarantor for first-dollar losses
  - Debt service fund: attractive, affordable option
  - Universal Service Fund must include broadband

Partial Loan Guarantees

- RUS program in place, but changes needed
- 80/20 split on first-dollar losses must be reconfigured
- 100% of losses up to 40-60% should be covered
- Approval process must be shortened and should include private vetting
- Tax Code changes could help increase investments by municipalities

Debt Service Reserve Fund

- Similar to private financings
- Fund would guarantee portion of project
- Program should have ceilings
- Shortfalls would allow access to loan from fund

Universal Service Fund

- Big broadband should be included
- New conditions could help keep fund liquid and useful:
  - Repayment of funds should come from network appreciation
  - Payments would be made at time of exit
  - Payments should be used to replenish fund

Benefits: Priceless

- Population expansion where it can best be accommodated
- Growth in new enterprises
- Influx of telecommuters interested in a more quiet lifestyle
- Less densely populated areas are fertile territories for new applications development and testing

Rural America: An Important National Asset Bypassed

Rural America has largely been overlooked when big broadband projects are being considered.

While there are barriers that must be overcome to stimulate investment in projects outside mainstream communities, if the benefits that have resulted from initiatives in Southeastern Minnesota are typical of those that can occur elsewhere, setting aside rural challenges should be a priority.

Rural America communities, in spite of quality of life advantages, have declined steadily since construction of the interstate highway system began in 1956, many losing their status as regional trade centers and almost all of them suffering from the migration of their residents, particularly young people, to metropolitan America.

Bothered by what had happened to his community when I-90 in the mid-1960s bypassed Winona, Minnesota, Bob Kierlin, the founder of Fastenal Company, a multi-national corporation headquartered there, pondered in the early 1990s the emergence something called the Internet. Recognizing its potential, he determined that he would not allow Winona to miss what promised to be another "super highway."

In 1987, he and his four partners had taken 50 percent of the gains they realized from Fastenal's initial public offering and created a foundation devoted to education. The five contributed the same 50 percent from six stock splits that followed. In 1989, the Hiawatha Foundation purchased the campus of the former College of Saint Teresa in Winona and on it began to create an education park. The centerpiece of the campus was to be, promised Kierlin, "the most technologically rich high school in the world."

When Winona's Catholic high school, Cotter, opened in 1992 at its new location on the campus, the school met Kierlin's promise, utilizing leading-edge connectivity based in fiber-optics to create unique academic and vocational opportunities for students. Among the school's features were state-of-the-art audio and video studios and production facilities.

The campus fully remodeled, three preparatory schools (mathematics and science, foreign language, and performing arts) created there and served by 200-bed residence halls for both men and women, Kierlin in 1992 asked two friends to study if linking Winona's education institutions (two universities and public and private secondary and elementary schools) with fiber-optics lines would extend the reach of teaching and learning and allow for the sharing of precious and shrinking resources.

Delivered in early 1993, the feasibility study heartily endorsed the benefits of such a project and one year later the not-for-profit education initiative, Luminet, tied together Winona

educational institutions, public and health care buildings with high-capacity communications fiber.

The project was an instant success, and three years after Luminet became operational, the Fastenal and foundation founders took the next step, investing in a state-of-the-art hybrid fiber-coax network that extended across the Winona area. Fiber-coax was the choice because in 1997 fiber networks were prohibitively expensive.

The first eight million shares of stock purchased in the for-profit company that would replace Luminet were donated to Winona's not-for-profit community. That ownership stake has now grown to 40 percent and the company has broadened its early mission of Winona betterment to include helping rural America solve its connectivity problems.

HBC is profitable and has paid a dividend for three consecutive years. The company has also used its profits to fuel steady expansion. It now operates in seven small Southeastern Minnesota markets. Company founders and employees point with pride to the benefits its networks have created for its communities. But the firm's returns are not sufficient to attract outside investment to broaden the scope of its networks. HBC was built with $24.6 million in private capital and $5.5 million in debt financing and now has negative retained earnings of $11.8 million.

Nonetheless, HBC has proved there is a huge appetite for broadband connectivity in rural markets and the existence of a value proposition that is based in service rather than price.

After connecting its first customer in early 1999, HBC steadily gained penetration in the Winona area. Although it is not the low-price provider in any of its markets, it is the dominant provider in each, the result of a customer-first approach and the production of extensive local video programming of exceptional quality that has pushed penetration rates to disbelieved levels (cable 78 percent; Internet 84 percent ; telephone 74 percent) in the seven communities served.

When the company attained profitability in 2007, it equaled the market norm for telecommunications companies – but HBC did it in a **competitive** environment. The market norm was generated in monopoly situations.

Ironically, had it not been for the community betterment interests of its founders, HBC likely would never have become a reality.

The company's three-year earnings total $1.1 million and have provided shareholders a cumulative return of 0.765 percent on equity. That does not compare favorably to the investment return expectations of 8 to 12 percent in the electric utility industry in Minnesota,

nor does it come close to approximating the stock markets' average annual returns of 9.3 percent from 1900 to 2008 (4.6 percent price appreciation, plus 4.7 percent in dividends).

Measured differently, however, the value of broadband to rural America is unmistakable:

- Population growth in each of HBC's markets since the networks were built, the gains in several of the seven markets reversing six decades or more of declines;
- New businesses in each community, every one of them dependent upon big broadband and in four cases the first new enterprises in the communities in 50 years;
- Inward migration of telecommuters in each of the seven markets; and,
- Education and health care trials based on broadband networks that are now being studied to prove suspected measurable improvements in the quality of life and the overall health condition of the populations.

Population

Community	Year Network Built	Population	2009 Population	Change	Percent	Previous Decade
Winona	1998	22,450	26,876	4,426	19.71	4.20
Goodview	1998	3,240	3,670	430	13.27	3.89
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Stockton	2008	682	719	37	5.42	- 1.68
Total		**34,347**	**39,823**	**5,476**	**15.94**	

- 2009 population figures are estimated based on building permits and electrical meter reports. The estimates were obtained from city officials.

Population in the **Winona** area, stagnant since the beginning of the 20th century, declined appreciably (more than 10 percent) following the construction of Interstate-90 in the mid-1960s. The new highway, which connected La Crosse, Wisconsin, and Rochester, Minnesota, but bypassed Winona, ended Winona's status as a regional trade center.

Goodview had experienced some growth, beginning in the 1960s, as the result of a builder who constructed simple three-bedroom ranch homes, then sold them for $50 to $100 down and $100 a month contract-for-deed payments, allowing real estate market appreciation to leverage the conventional mortgage markets two to three years later. In addition, Goodview residents paid no school tax. Goodview children were educated without charge at the Winona State College campus school.

Winona State was then a teacher training institution and the campus school provided a working laboratory for students. But that growth dried up when the builder and his son died. The firm ceased business in the 1970s and the campus school also closed early in that decade.

Wabasha, Rollingstone, Lewiston, and **Stockton** had seen population decline begin in the early 1900s as lumbering efforts began to dry up and major building projects (highways, railroads and the locks and dams on the Mississippi River) were completed. But all the communities now boast new housing developments announced since the broadband networks came to the communities. Wabasha also has seen the construction of a large condominium development on the banks of the Mississippi River that has attracted residents from as far away as Florida.

While Winona County's population – with the possible exception of St. Charles, which is 20 miles east of Rochester, home of the Mayo Clinic and a large IBM manufacturing facility – had been stagnant for several decades, the emergence of initiatives funded by the founders of Fastenal Co. have created a period of new growth that seems to spread to wherever broadband networks are created.

Even **St. Charles**, aided in the 1990s by the sprawl created by the growth of Rochester employers, turned broadband into a strategic population initiative. St. Charles officials, envisioning their city becoming the No. 1 bedroom community to Rochester, determined in 2001 that broadband connectivity was the single most-important variable in realizing the vision. In 2001, St. Charles EDA members convinced HBC directors to build a network there. When network construction began, two tiny (fewer than 20 lots each) developments had been platted. Today there are eight substantial developments (ranging from 100 to 240 lots). Homes have been built and occupied in each of them, and construction continues at a pace that has led to reports in Minnesota metropolitan media that call St. Charles "boom town."

Officials of the seven communities will note, if asked, that broadband connectivity must be credited for population gains, because construction of the networks in the seven communities is the differentiator of influence.

Commerce

Always known for its entrepreneurial spirit, **Winona** in the late 1970s was victimized by the beginning of another transition. Winona industries, developed almost exclusively by local entrepreneurs, began to be sold to firms headquartered outside Winona and, in some cases, outside the U.S.

The Winona Daily News was sold to Lee Enterprises, Davenport, Iowa, in 1979, beginning the trend. Fiberite, a large strategic materials (plastics) manufacturer was sold to Beatrice Foods, Chicago, and then to Imperial Chemical Company, United Kingdom. J.R. Watkins a

pharmaceuticals and sundries manufacturer, first filed for bankruptcy and then was acquired by Jacobs Industries, Minneapolis.

Other employers of significance simply closed. Swift and Co., Badger Equipment, Krager Koach and Skydraulic Zoom Boom were among the largest.

The number of retail businesses also declined rapidly, and downtown Winona began a conversion from a retail center to a service center, a trend that continues today. Once a bustling area anchored by department stores H. Choate and Co., Bailey and Bailey, The Bon Ton, Salets, and J.C. Penney Co., all of those establishments disappeared from downtown Winona before the mid-1980s, and Choate, Bailey, Bon Ton and Salets closed their doors permanently. The real estate left behind was either razed or filled by government offices (county, state, and federal) and other service businesses such as insurance, finance, and health care.

But those trends ended with the construction of the network in Winona in 1998. The community now credits broadband with helping it attract 11 new businesses and industries and more than a thousand jobs to the community, which has experienced its first substantial growth in a century.

Winona has also become a fine arts center. Developed in the last six years are the Minnesota Marine Art Museum (another Kierlin-financed attribute), the Great River Shakespeare Festival and the Beethoven Festival. The Shakespeare Festival attracts professional actors from New York, Chicago, Los Angeles, and San Francisco, in addition to accomplished artists from the Twin Cities and Milwaukee, Wisconsin. Beethoven's 2010 season will feature world-renowned cellist Yo-Yo Ma as well as the Vienna Boys Choir, and the Canadian Brass.

St. Charles' major local employer, North Star Foods, was destroyed by fire in April, and although a number of neighboring communities are courting the firm, St. Charles believes it will retain the food production industry because connectivity there is superior to facilities in the other communities, including Rochester, Minnesota.

St. Charles has also seen four new businesses open since 2002, and the retail anchor, Mike's Super Valu, has invested in a larger building to accommodate the community's 430 new residents.

Relocation of a Canadian manufacturer to **Wabasha** is being negotiated, and the community has attracted six new employers since 2005, including the National Eagle Center and a new regional prison facility. All of the enterprises cite the fiber to the home network as a key factor in their decision to locate there.

Rollingstone, Lewiston, and **Stockton** all have businesses today that weren't there when the networks were completed in 2007 and 2008. Stockton is the most dramatic example. The community was wiped out by a record flood in 2007. Storms that fueled the torrent also destroyed network elements that had been put into place. Today the community is fully rebuilt and growing, something its former mayor believes would not have happened without the construction of the network.

Telecommuters

Although specific data on the number of telecommuters who have relocated to the seven communities will not be available until 2010 census statistics are published, economic development officials in Winona County estimate that more than 10 percent of the 5,398-resident gain can be directly attributed to people who work exclusively from home.

While that alone is significant, all six of the Winona County communities (Winona, Goodview, Lewiston, Rollingstone, St. Charles, and Stockton) have residents who work for Mayo, dividing their time between work-at-home and work in Rochester. Mayo runs three 45-passenger buses daily that pick up health care workers in all six of HBC's Winona County communities.

St. Charles also has a number of residents who are employed at the IBM facility in Rochester, most of whom also divide their time between work-at-home and Rochester.

Officials believe solid evidence exists that residents of the six communities who work in Rochester selected their residence based on the ability to work at home facilitated by the existence of the broadband networks.

Education, Health Care

Big broadband must be the goal throughout rural America, because wireless initiatives are not – nor are they likely to be – sufficient to drive emerging applications in the areas of education, health care, communications, and commerce.

By way of example, Winona, because of its broadband network, was selected in 2000 by Cerner Corp. of Kansas City as the alpha site for the firm's *I.Q. Health* rollout, a customer-generated personal health record. That initiative turned two years later into a full electronic medical record project, and Winona Health, the city's health care system, has for nine consecutive years been named to America's "most wired" health care institutions list.

When President George W. Bush in his final State of the Union address called electronic medical records the future in health care, The Lehrer News Hour found the future already existed – in Winona, Minnesota. Lehrer staff spent a week in Winona producing a 30-minute segment that

aired in February of 2008. That report triggered hundreds of letters to the Winona Area Chamber of Commerce from people exploring relocation because of the health care security offered by the project.

Cerner now is studying improvements in the overall health condition of the community, seeking to measure all gains – in quality of patient care, the overall health quality of community residents, customer satisfaction, population gains, and others.

Because of the emergence of new applications, particularly those in the health care area and the selection of Winona for another alpha health care project, this one designed to keep seniors and handicapped residents in their private homes longer, HBC has now begun overbuilding its HFC network with fiber to the home.

"Handling these emerging applications makes big broadband networks essential," said Gary Evans, HBC president and CEO, "and achieving declines in the health care cost spiral will be dependent upon initiatives like those we are trialing in Winona. Fiber is the only technology that will effectively do the job...and it is the only technology with the capacity to provide expanded bandwidth as application needs increase."

Winona has also seen leading-edge applications develop in education at all levels. Winona State University was among the nation's first laptop campuses, something that could not have happened without the HFC network but also a project that now demands more fiber. More than 80 percent of Winona State's 8,000 resident students live in private off campus housing. Without broadband availability, the required use of the laptops would not be possible.

The existence of Luminet also resulted in creation of The Virtual School of Winona, an initiative that put, without charge, computers into the homes of secondary and elementary school students. Virtual School enabled parents to become more involved in their children's education. As a side benefit, students turned into mentors for their parents in the proper use of technology.

All of the applications trialed and perfected in Winona are also available in the communities served by HBC.

The benefits of big broadband to rural America can be measured and provided in dozens of ways, but with results insufficient to convince fiber deployers to concentrate their efforts in the rural areas. There are several barriers – access to capital and return on investment, chief among them – that must be dealt with in an effort to change interest on the part of broadband companies.

Barriers, Potential Solutions

Barrier No. 1: Access to Capital and Return on Investment — If broadband services are to be deployed throughout rural America, the access to capital and return on investment disparities must be overcome.

It is important that big broadband be the goal throughout the country, because wireless initiatives are not sufficient to drive emerging applications in the areas of communications, health care and commerce.

In examining what might be done to stimulate investment in rural America deployment, personnel of companies that finance both public and private ventures were consulted, principally Managing Director Ralph McGinley of Oppenheimer & Co., which has provided investment banking services to rural broadband projects – municipal, public-private partnerships, and private applications – across the country.

Municipal Projects

McGinley and others noted that while the municipal tax-exempt market has a deep appetite for this type of debt, which has and will provide the development capital for broadband projects, these investments will not be made if bond investors must assume all the risk without credit enhancements. In other words, there is a market for municipal bond capital for broadband, but it cannot be accessed without credit support.

Utilizing tax-exempt revenue bonds, Oppenheimer financed the fiber-to-the-home project now under construction in Monticello, Minnesota. Revenue bonds are the only vehicle available for the financing of such projects because few if any municipalities will be willing to place the entire debt of their taxpayers.

All investment officials agree that there is a substantial municipal revenue bond market that could be attracted to sound projects with some level of credit enhancements where the financing tool used is tax-exempt bonds.

McGinley believes that to achieve rapid expansion of big broadband across the country, policymakers must embrace broadband as the next level of public utility. In addition, he says, the national provision of some form of credit enhancements which will support municipal debt offerings will open the door for that to happen. He suggests about fifteen projects in Minnesota alone would move forward with the proper program in place.

Private Projects

McGinley also discussed the question of access to capital from the point of view of a small private start-up such as HBC and whether any of these approaches for credit enhancements are valid for this situation. In his opinion. HBC, built by private funds, is an exception. If the private market providers were going to do more of these builds, he says they would have already been done.

First, the lack of tax-exempt financing pushes up the cost of capital, assuming investors could be found.

Second, private investors will compare the return on their investment to other market options.

There is a gap between what is achievable by a small start-up fiber-based service provider and current market expectations on ROI. McGinley believes comparing returns from a small private fiber provider start-up and a public utility is invalid. A public utility generally provides service to 100 percent of a market and it is that factor that leads investors to believe in the assured and safe investment claim. A telecom/broadband provider start-up has to project much less than 100 percent penetration. Moreover, what penetration will be achieved cannot accurately be predicted. Furthermore, McGinley believes the expected return would need to be in the neighborhood of **16 to 18 percent**, rather than 8 percent of a public utility because of the risk associated with a start-up and the cost of debt capital – if such debt capital is even available.

Given the gap that currently exists between private investor returns and market expectations, McGinley believes that credit enhancements and a large ROI subsidy (that could approach almost full subsidy) would be necessary to encourage the private sector to invest in private initiatives as opposed to public utility approaches.

Potential Government Backed Credit Enhancements

a. **Omnibus backing: grants or low-interest loans**. There is value in the government providing grants to build out big broadband projects. Low-interest loans are much less valuable. However, any benefits must be viewed in relation to drawbacks. McGinley thought this the least attractive of the alternatives, saying there are process and allocation problems (similar to the stimulus situation), and it ties up upfront government money and involves oversight which is unattractive to both parties.

b. **Fast-Track Partial Loan Guarantees.** The federal government already has one of the best credit enhancements at its disposal: partial loan guarantees. But the Rural Utilities Service (RUS) program has never been used because: 1) the 80/20 split on first dollar losses has not

been sufficient to attract private investors; 2) the approval process takes too long; and, 3) direct loans from the government have lower interest rates than a federally guaranteed private loan. The program should be tweaked in two ways:

> First, the guarantees should cover 100 percent of losses up to 40 to 60 percent of the loan.
>
> Second, because private investors take on half the risk but write a check for the full amount, the government can rely on them to do a thorough vetting of projects, allowing the government to implement a fast-track approval process. The new process permits the government to use its limited taxpayer dollars to encourage private investment for rural projects.

Finally, changes in the tax code, allowing projects financed by tax-free municipal bonds to qualify, should be seriously considered. This loan guarantees option is favored by many investors.

c. **National capital pool**. The pool would act as a first guarantor for a portion of the loss should there be a shortfall on a project. Projects would have to meet specific criteria to be covered.

d. **Debt service reserve fund replenishment program**. This would be similar to what is now done by credit worthy entities in private financings. An example would be that on a $26 million project, the associated debt service reserve fund to be guaranteed would be $2 million. There would be ceilings so that payout would be no higher than 10 percent of the par amount of the bonds in a given year. Example: In year four, the $26 million project has a shortfall of $750,000 that is filled from the reserve fund. The draw would be as a loan from the federal debt service fund repayable under manageable terms. There is also a question of how long this debt service reserve fund guarantee would remain in place, how many times it could be tapped, etc. A parameter formula would identify threshold conditions for burning off the covenant as the business got established and secure. McGinley considered the debt service reserve fund replenishment program the most attractive option. He has prepared a short analysis of the fund. The analysis has been circulated to the state governments of Indiana, Vermont, and Minnesota. It is available, if desired.

e. **Universal Service Fund**. The federal government, given the application convergence going on around fiber in the communications field, should be encouraged to reconfigure the Universal Service Fund (USF) that assists rural telephone companies to include big broadband projects. There is a potential advantage to the latter strategy in that fiber networks, unlike copper and coaxial plants, now are rapidly appreciating in value, providing reward to investors at the time of exit. The USF reconfiguration should include provisions that allow the federal government to share in the financial benefits that are realized at the time of exit, allowing the fund to enhance its assets for distribution, fueling more rural-area deployment.

Barrier No. 2: Transport Costs — Service providers in rural America are at a severe disadvantage when it comes to the cost of broadband transport. While fiber transport companies have available fiber that could be used to reduce costs to rural communities, few network points of presence (POPs) have been created in rural areas. This fiber typically runs alongside interstate highways, state highways and railroad tracks. Most of the POPs, however, have been created in larger towns or in locations where multiple fiber providers converge. There are thousands of small towns that are 50 miles or more from a network POP. Connecting these small towns to a network POP is possible usually only through the telephone local exchange carrier (LEC), and in many cases two or more telephone companies may be required to make the necessary connections to complete a transport link to a POP. This is known as the loop cost. The loop cost of a simple DS3 in a rural area could easily run more than $5,000 per month compared to a more typical $550 in an area nearer a POP.

Reducing transport costs would encourage more rural last-mile services at affordable costs, but transport companies have not responded to the need because linking into a fiber route typically costs $100,000 to provide a hut with appropriate electronic equipment and power. Recovering this expenditure drives up cost to service providers and makes last-mile service expensive.

Incentives are needed to encourage fiber transport companies to locate huts at strategic points amid clusters of communities. These huts could be used by neighboring communities and eliminate the need for multiple-loop providers. If a community or local provider built fiber to the rural POP, it would also eliminate the high costs charged by some rural LECs.

The federal government logically is the source of last resort for incentives or subsidies to the transport companies to assist with the significant start-up costs.

Low-interest loans from RUS could be used to put facilities in place. Then, if both RUS and the transport companies used a model developed by HBC, a three-way benefit would result, with the last-mile customers, service providers and transport companies all as beneficiaries of the program.

To eliminate huge start-up costs that prevent rural providers from expanding services, including broadband, HBC charges its rural provider wholesale customers on a per-subscriber basis for use of fiber and other facilities needed to provide last-mile services.

Per-subscriber charges allow the provider to build revenues in new territories without the burden of financing all of the start-up costs. Payments accelerate as customer numbers surpass plateaus negotiated in advance. When customer numbers reach the top plateau, the balance of the start-up costs and financing fees become due.

This model allows service providers to build business cases that support last-mile extensions to more rural areas.

Barrier No. 3: Access to Training, Operator Understanding — While standards and training programs exist for providers who deliver content by copper, coax and hybrid fiber-coax, no such programs exist for those who deliver content via fiber-to-the-home networks. While the federal government should develop the standards, training programs would likely be most successful if developed and operated by private sector organizations such as the Fiber To The Home Council.

The primary challenges are knowledge of the optical domain, the use of multiple wavelength and physical and technical skills needed for fiber splicing and management. The old model of contractor fiber splicing doesn't work well in the FTTH environment, at least outside main plant construction. Every new drop line must be spliced, tested, and provisioned, these operations often occurring during conditions that are unfavorable. Even with new connectors, special skills are required.

Government support for training for implementations, operations, and management of fiber-optics networks would help accelerate the spread of successful fiber-optics network facilities throughout the country. A training initiative should embrace two steps.

The first step would be to support a program to accelerate identification of best-practices training for fiber implementation, operations, and management. Such a program might take some lessons from both telecommunications institutes and from industry groups also committed to quality training. For example, the National Regulatory Research Institute (NRRI) focuses on creating the knowledge to meet regulatory challenges (among other goals). There is a similar need to rapidly identify best practices for training to meet the fiber implementation challenge. In this step a small but focused challenge program set up in cooperation with the industry associations and university centers would aim to provide rapid results identifying best practices for training and management.

The second step would be to support a program of training for implementation, operation, and management of fiber-optics networks. Support for training would be particularly beneficial to smaller operators.

A pool of funding for participation and attendance at relevant industry and research conferences would be simple to administer and would take advantage of available resources.

A second more ambitious approach would be to create something like a Fiber Training Institute (FTI)). A rough analogy might be made to the work of the United States Telecommunications Training Institute (USTTI), which is a non-profit public-private partnership between senior federal officials and leaders of the U.S. information and communication technology (ICT) and broadcast industries focusing on development and training for the developing world. The purpose of a Fiber Training Institute would be very different with a focus on cutting-edge

development and training for U.S. fiber implementations and operations committed to big broadband to the home. The actual training sites might emulate the practice of the USTTI which takes place in corporate and federal training facilities, laboratories and universities. A decentralized highly effective training program developed by the FTTH Council is envisioned.

Conclusion

Although HBC's return on investment is not likely to encourage venture capitalists to fuel accelerated progress in broadband developments across rural America, the company's investors are satisfied with the role the networks have played in development of the communities that now have networks.

Based on population growth (including the increase in telecommuters), the number of new enterprises, leading-edge applications in the area of health care and education, and appreciation in the value of real estate wherever HBC's broadband networks are located, there are more than sufficient reasons to be satisfied.

As one of HBC's shareholders said at the firm's annual meeting in July:

The value of the benefits created? **Priceless!**

It is evident that rural America needs big broadband pipes. With the National Broadband Plan, the federal government has an opportunity to establish the mechanisms to make that occur. HBC stands ready to provide support to help make that happen.